Cedar Street Sewer Separation Project (25% Design)

City of Somerville

September 8, 2014

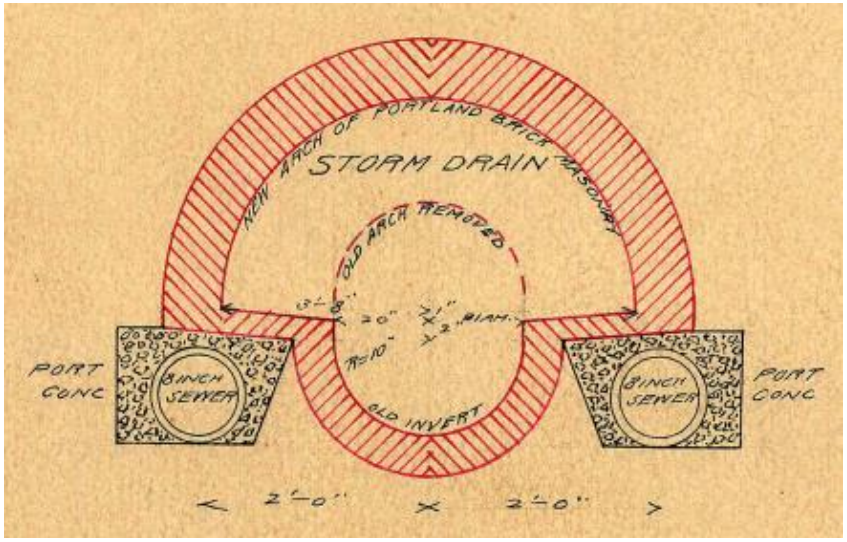
Weston&Sampson

History

- Drainage System Constructed in 1901
- Sewer System Constructed in 1909
- Water Mains Constructed in 1891

Existing Conditions

- 24-inch x 48-inch brick combined sewer
- 2 – 8-inch VC separate sewers



Objectives

- Alleviate Flooding
- Upgrade the Sewer/Drainage/Water/Gas Infrastructure
- Reconstruct the Roadway, Bike Lane, Parking, and Sidewalks for ADA Compliance

Flooding Events

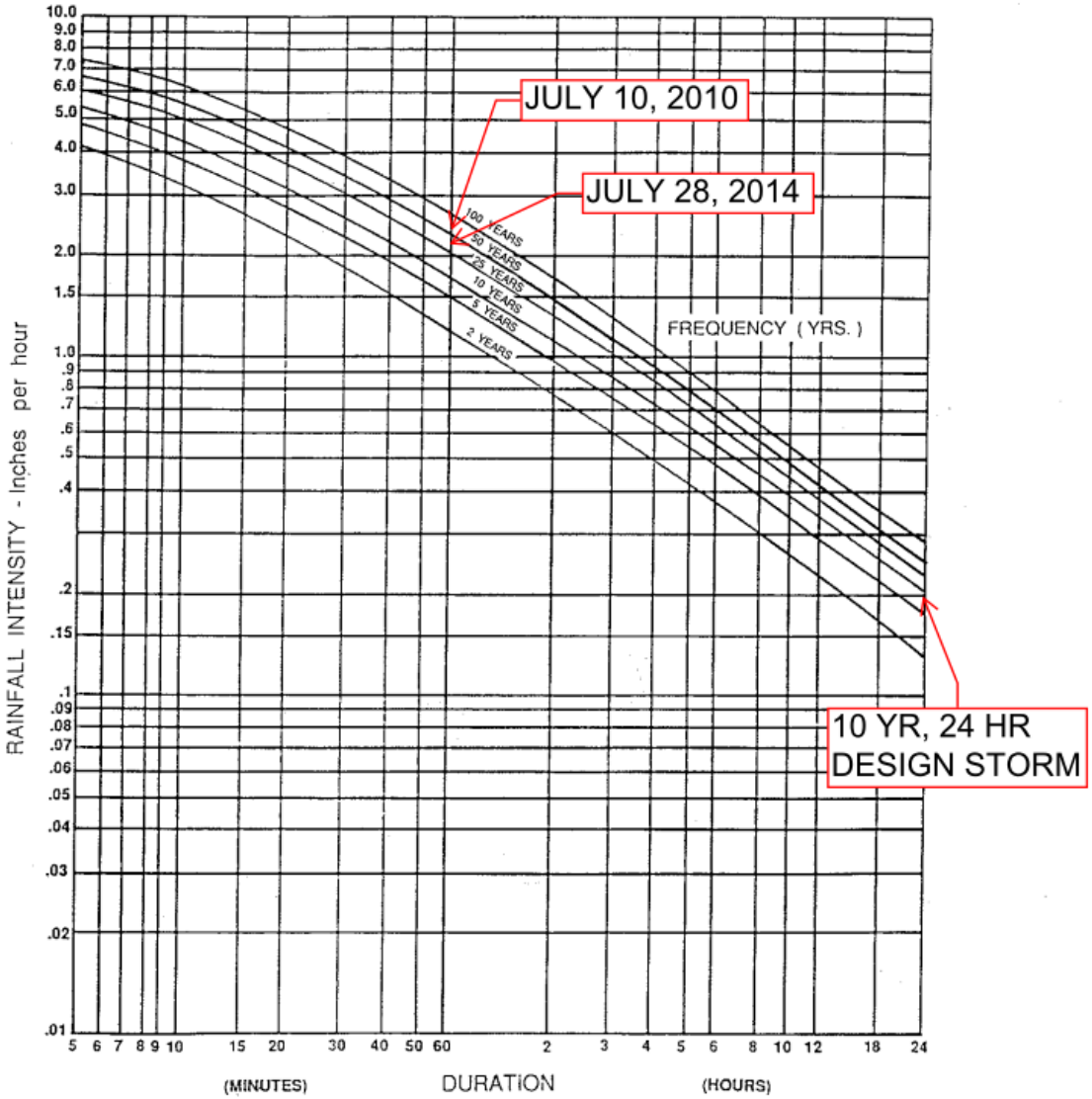
- July 10, 2010
  - 2.5 inches of rain in 1 hour

Flooding Events

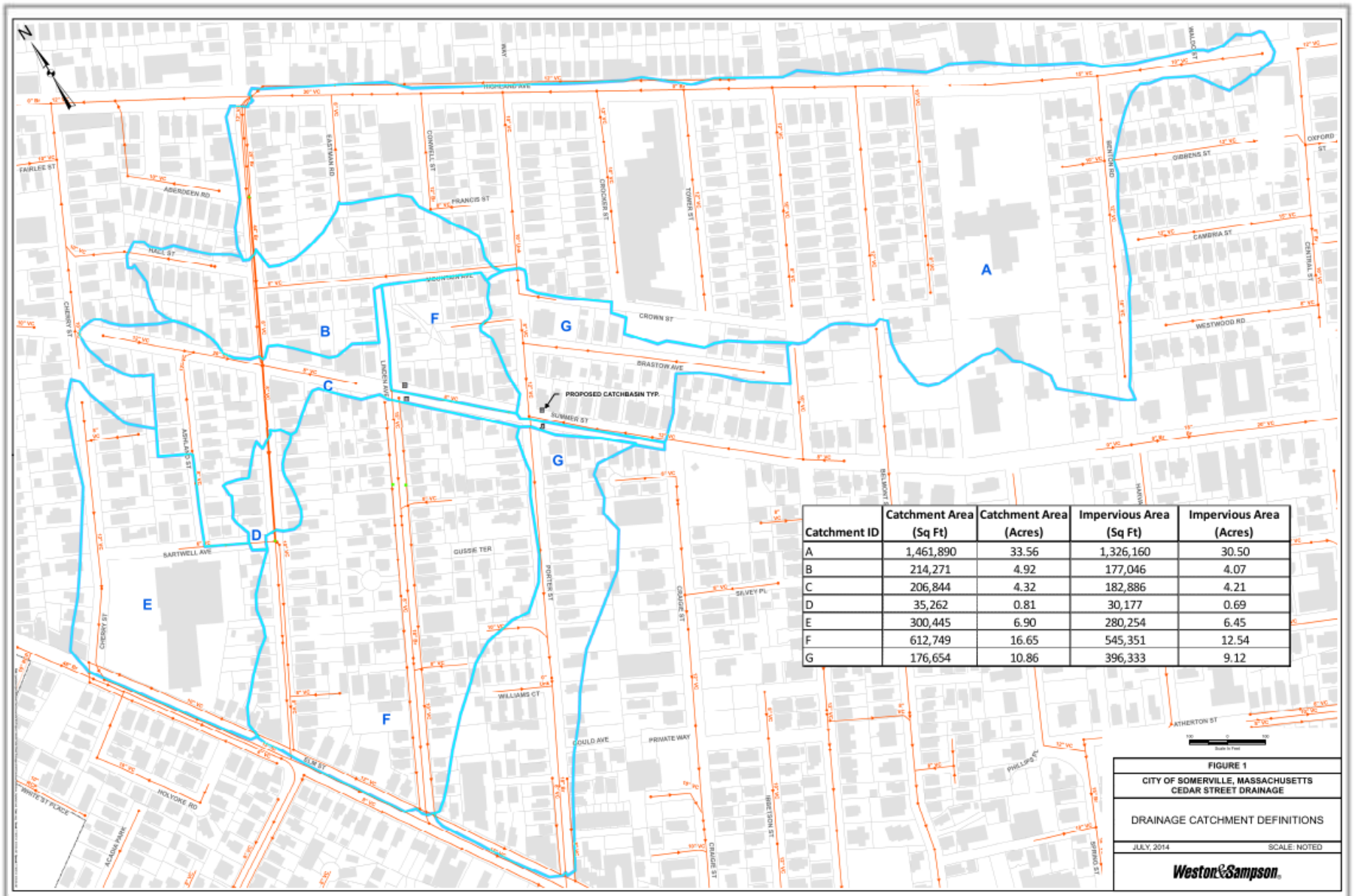
- July 28, 2014
  - 2.2 inches of rain in 1 hour

Understanding Flooding Events

- Intensity/Duration/ Frequency
- Drains typically designed for 10-year, 24-hour storm event (4.8 inches of rain, 0.2 inches per hour)
- Sink Analogy



Intensity — Duration — Frequency Curve for Boston, MA

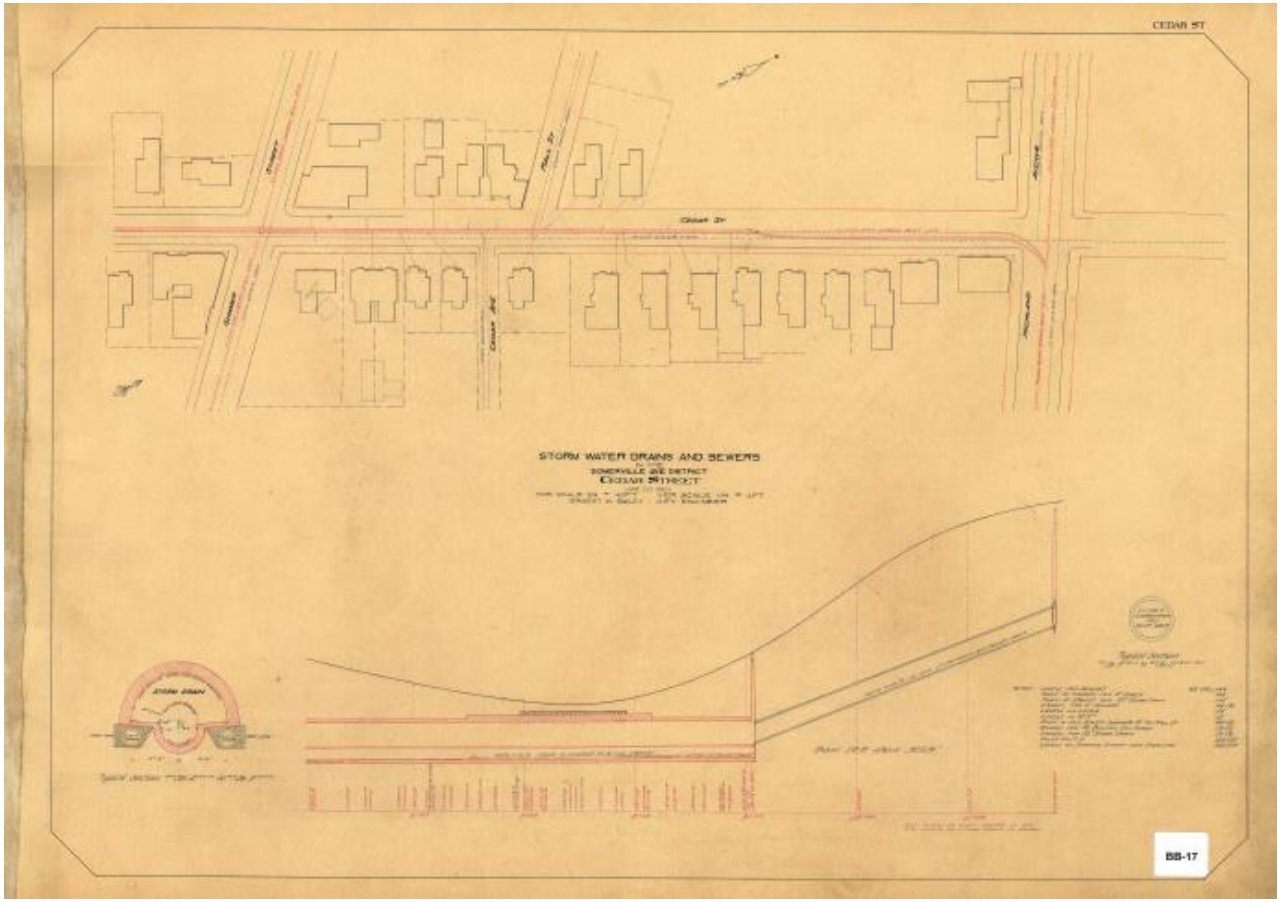


Catchment ID	Catchment Area (Sq Ft)	Catchment Area (Acres)	Impervious Area (Sq Ft)	Impervious Area (Acres)
A	1,461,890	33.56	1,326,160	30.50
B	214,271	4.92	177,046	4.07
C	206,844	4.32	182,886	4.21
D	35,262	0.81	30,177	0.69
E	300,445	6.90	280,254	6.45
F	612,749	16.65	545,351	12.54
G	176,654	10.86	396,333	9.12

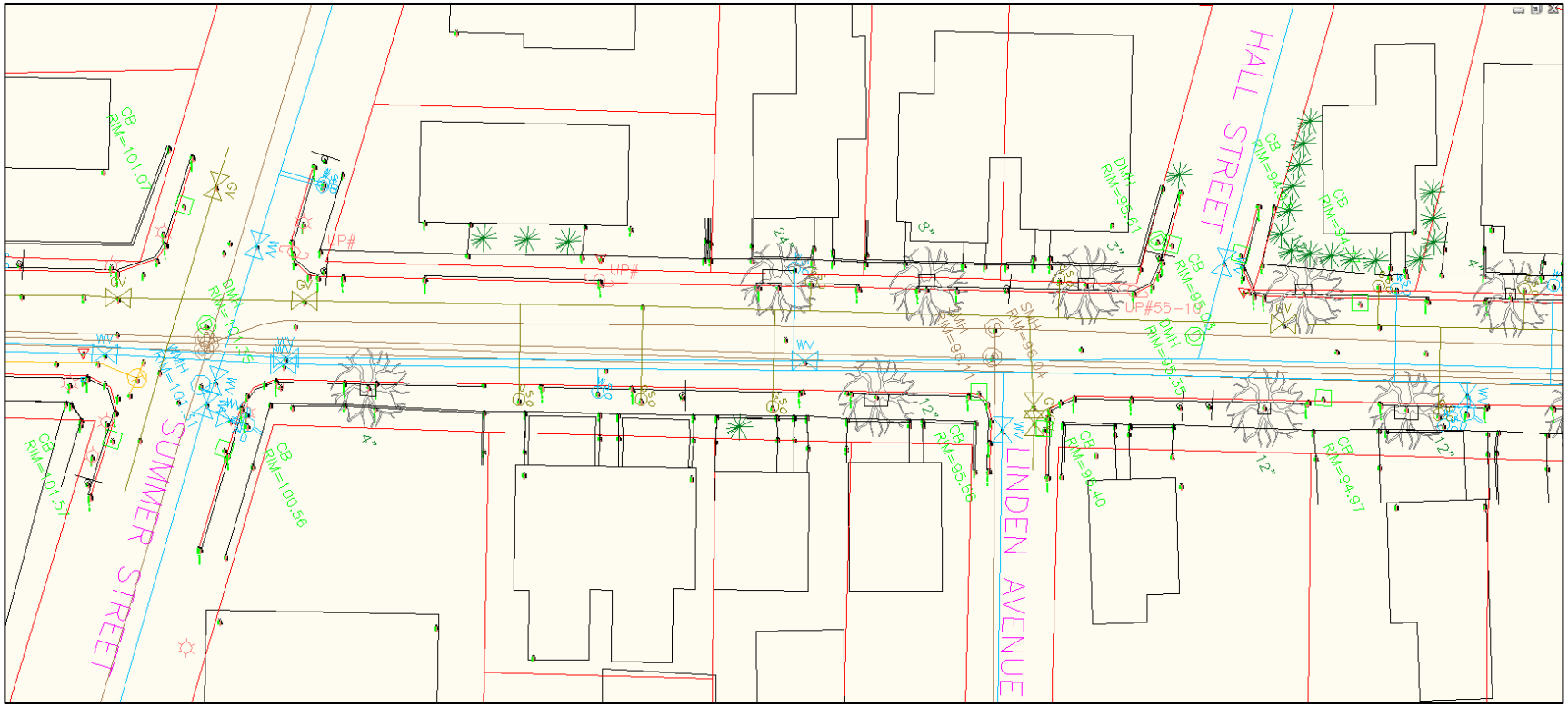
Work Completed-to-Date

- Record Drawing Review
- Utility & Topographic Survey
- Manhole Inspections(28 Manholes)
- Television Inspection (4,898 LF)
- Hydraulic Modeling
- 25% Design Plans

Record Drawing Review



Utility & Topographic Survey



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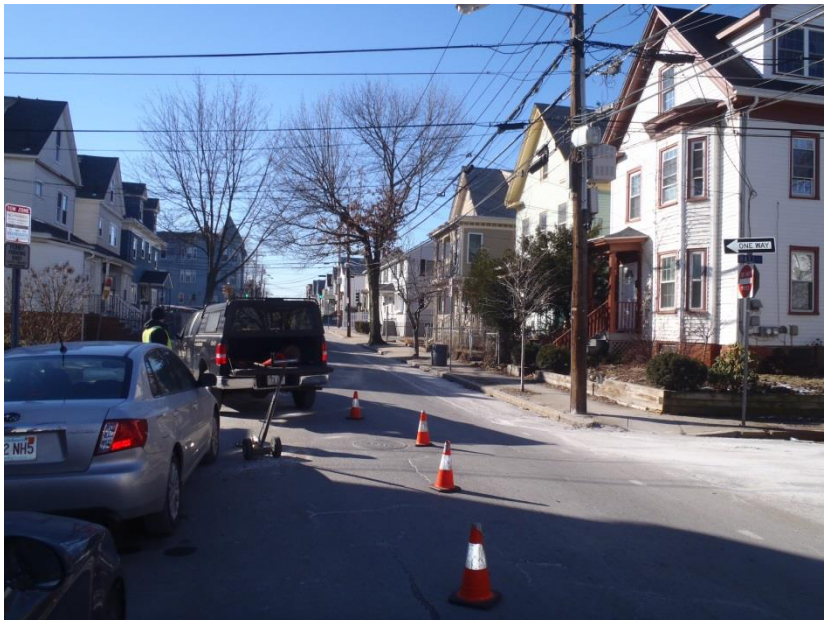
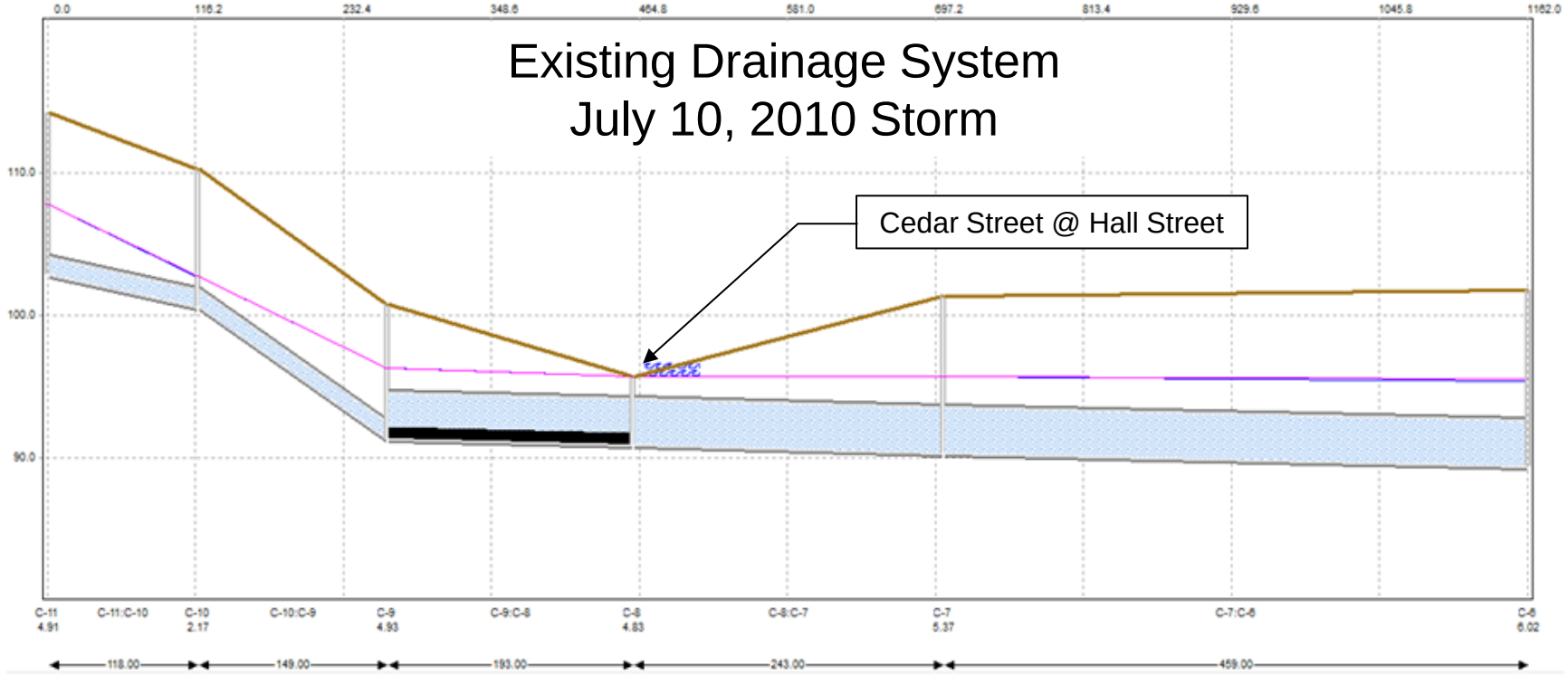
Manhole Inspections



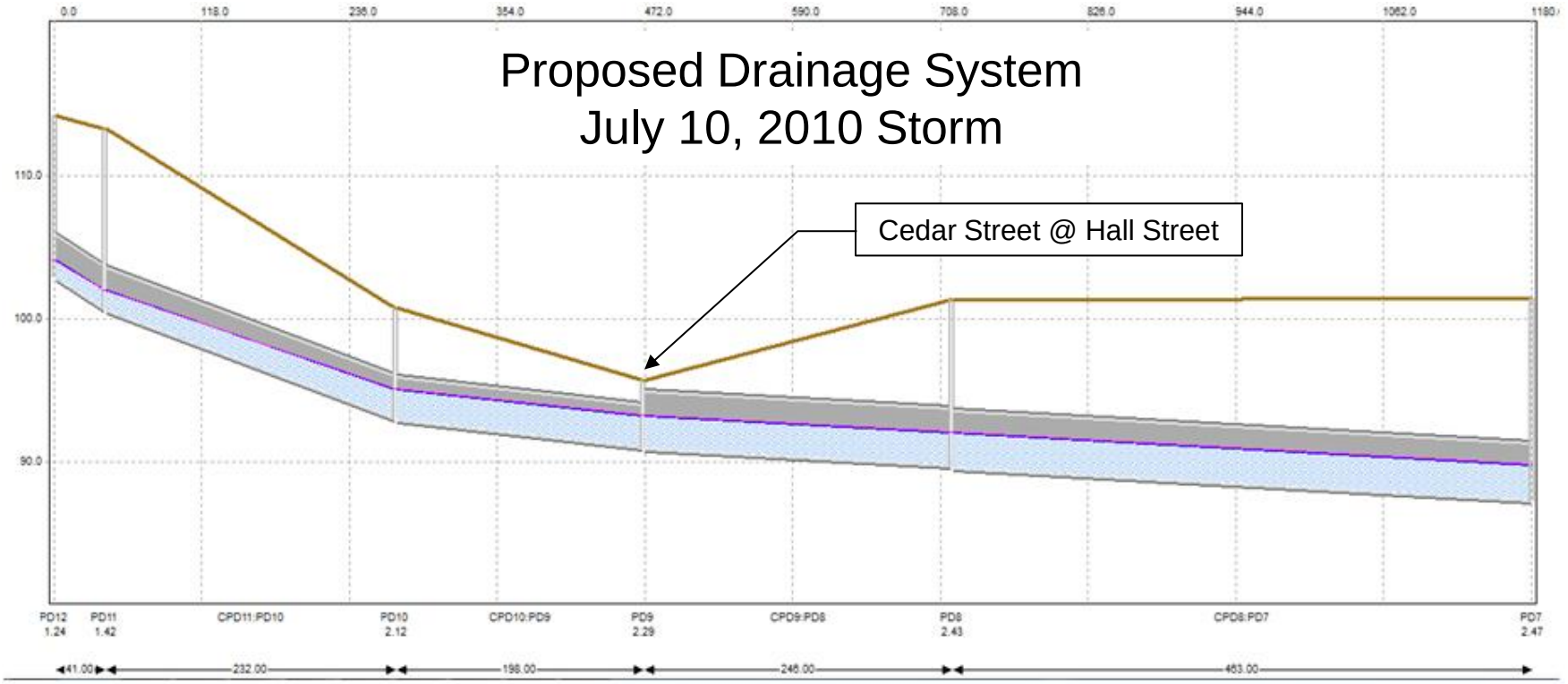
Television Inspection

Environmental Probes

Hydraulic Modeling

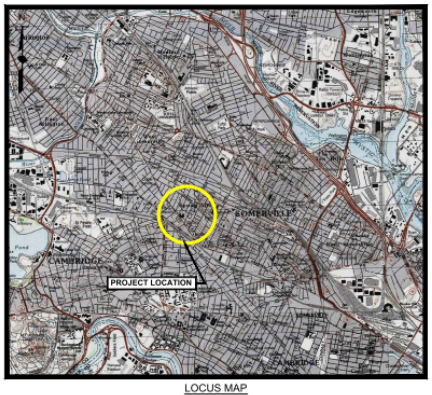


Hydraulic Modeling



25% Design Plans

CITY OF SOMERVILLE, MASSACHUSETTS



LOCUS MAP

DEPARTMENT OF PUBLIC WORKS
1 FRANEY ROAD,
SOMERVILLE, MA 02145

CEDAR STREET
SEWER SEPARATION PROJECT
25% DESIGN SUBMITTAL

JOSEPH CURTATONE, MAYOR
STANLEY KOTY, COMMISSIONER OF PUBLIC WORKS

DRAWING INDEX

SHEET NO.	TITLE
G-1	LEGEND, GENERAL NOTES AND ABBREVIATIONS
S-1 TO S-3	UTILITY PLAN AND PROFILE-ELM STREET
S-4 TO S-7	UTILITY PLAN AND PROFILE-CEDAR STREET
C-1 TO C-4	CONSTRUCTION PLAN AND PROFILE
D-1 TO D-2	TYPICAL SECTIONS AND DETAILS
G-1 TO G-2	CURB TIE AND GRADING PLAN
T-1 TO T-2	SIGNS AND PAVEMENT MARKING PLANE
T-3	TRAFFIC MANAGEMENT PLAN

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED FEBRUARY 25, 2010, THE 2012 CONSTRUCTION STANDARD DETAILS, THE 1996 CONSTRUCTION AND TRAFFIC STANDARD DETAILS (AS RELATES TO TRAFFIC STANDARD DETAILS ONLY), THE 2003 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

Weston&Sampson
Five Centennial Drive, Peabody, Massachusetts 01960-7985

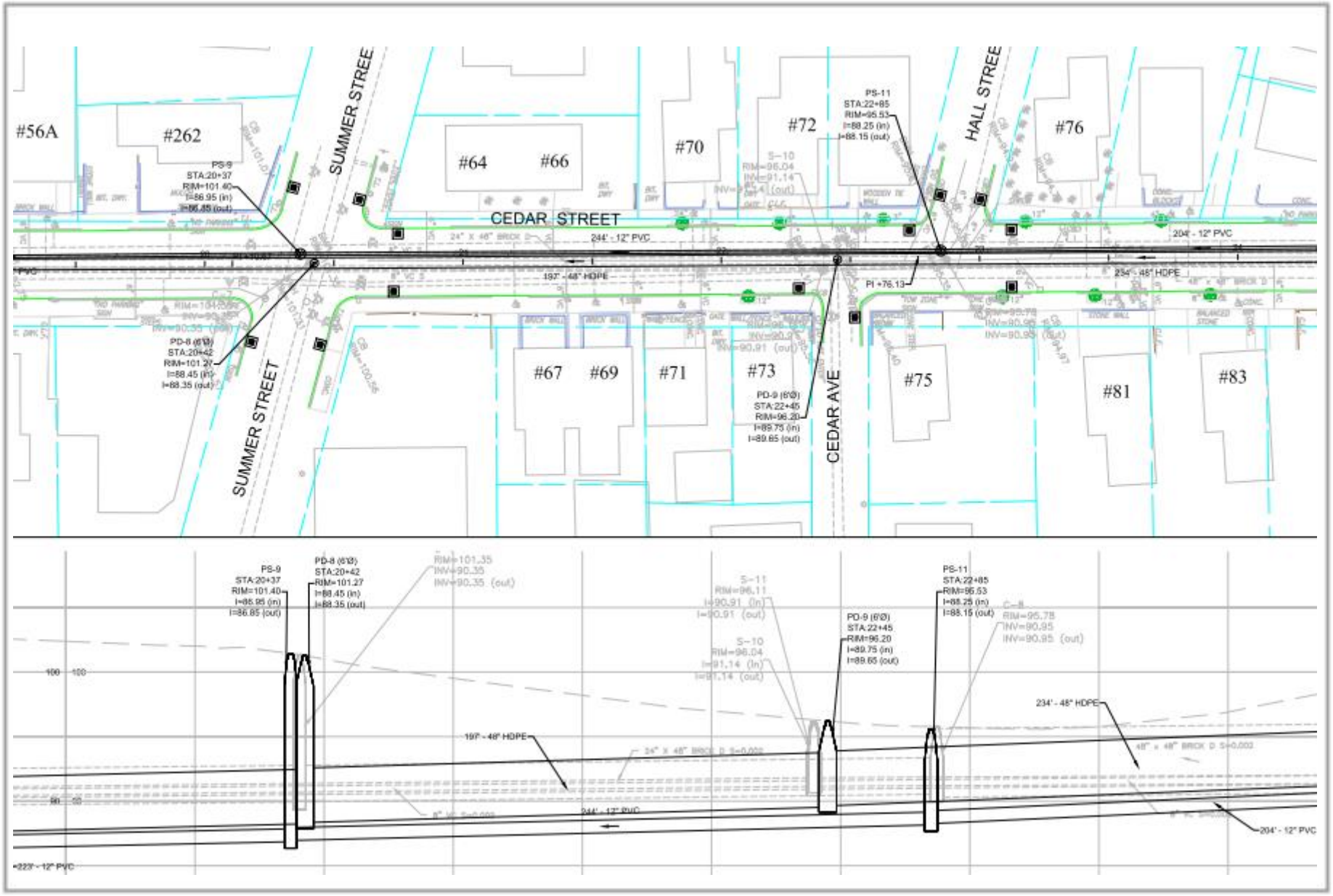
File No. –

Utility Improvements

- Increase Drain Capacity
- Install New Catch Basins
- Separate Sewer System on Cedar Street
- Replace Water Mains (10” CI and 12” CI)
- Replacement of Gas Main (12” CI)

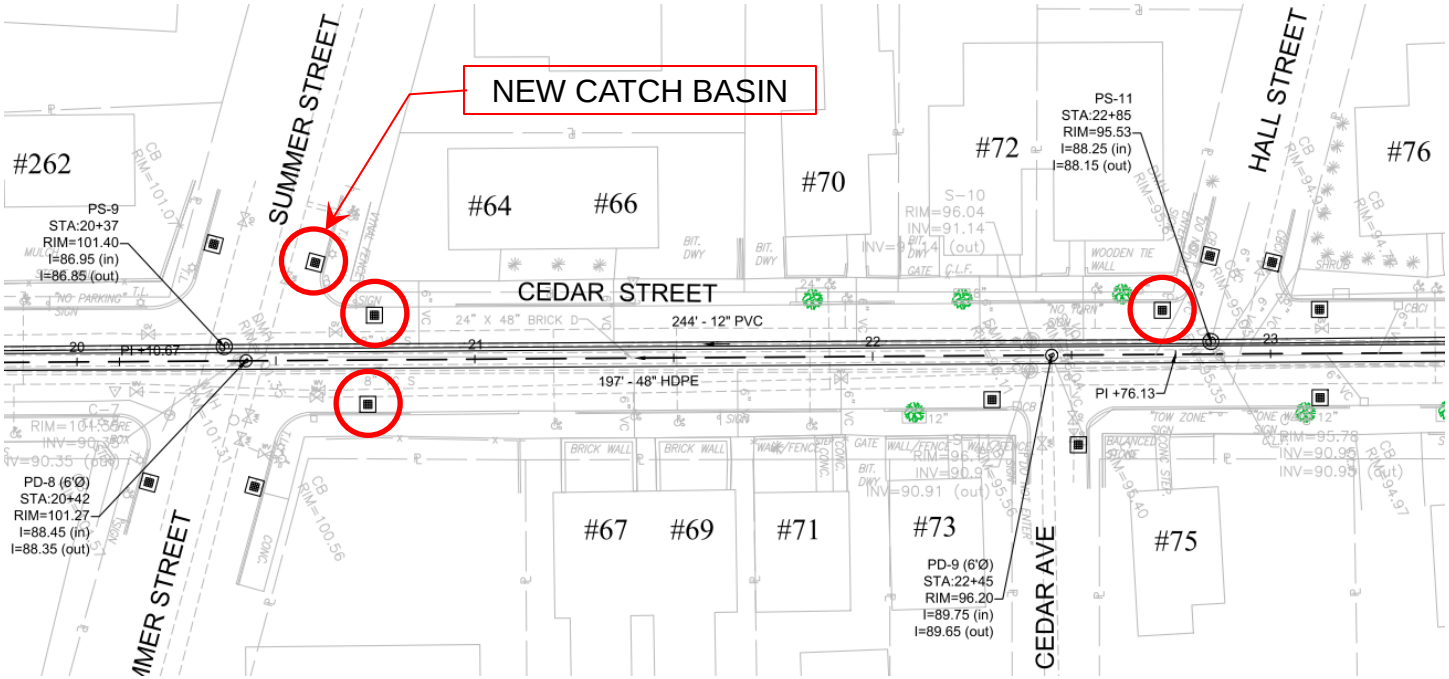
Increase Drain Capacity

- Replace existing 24”x48” brick drain with 48” HDPE


#56A
#262
#64
#66
#70
#72
#76
#67
#69
#71
#73
#75
#81
#83
SUMMER STREET
CEDAR STREET
HALL STREET
CEDAR AVE
PS-9
STA:20+37
RIM=101.40
I=86.95 (in)
I=86.85 (out)
PD-8 (6'Ø)
STA:20+42
RIM=101.27
I=88.45 (in)
I=88.35 (out)
PS-11
STA:22+85
RIM=95.53
I=88.25 (in)
I=88.15 (out)
PD-9 (6'Ø)
STA:22+45
RIM=96.20
I=89.75 (in)
I=89.65 (out)
PI +76.13
244' - 12" PVC
204' - 12" PVC
197' - 48" HDPE
234' - 48" HDPE
223' - 12" PVC

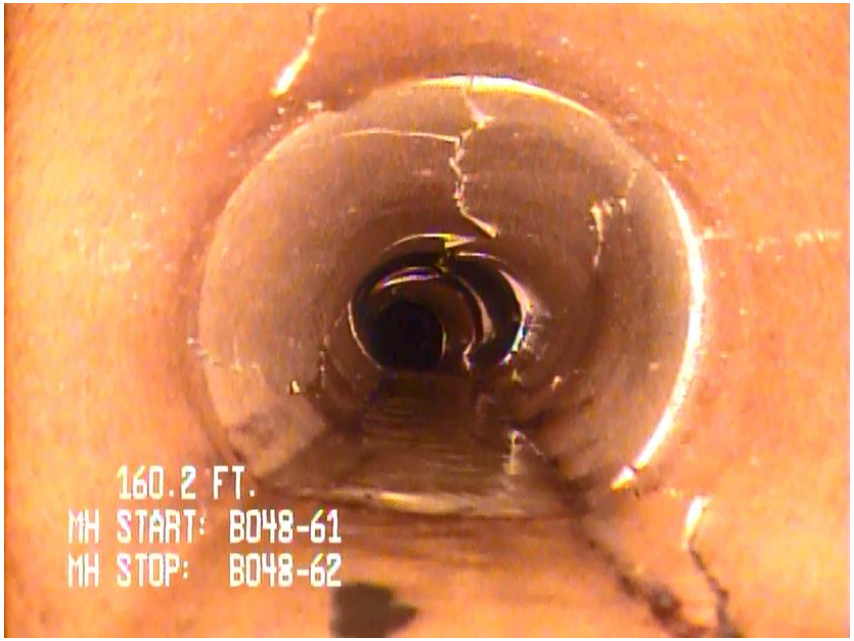
Install New Catch Basins

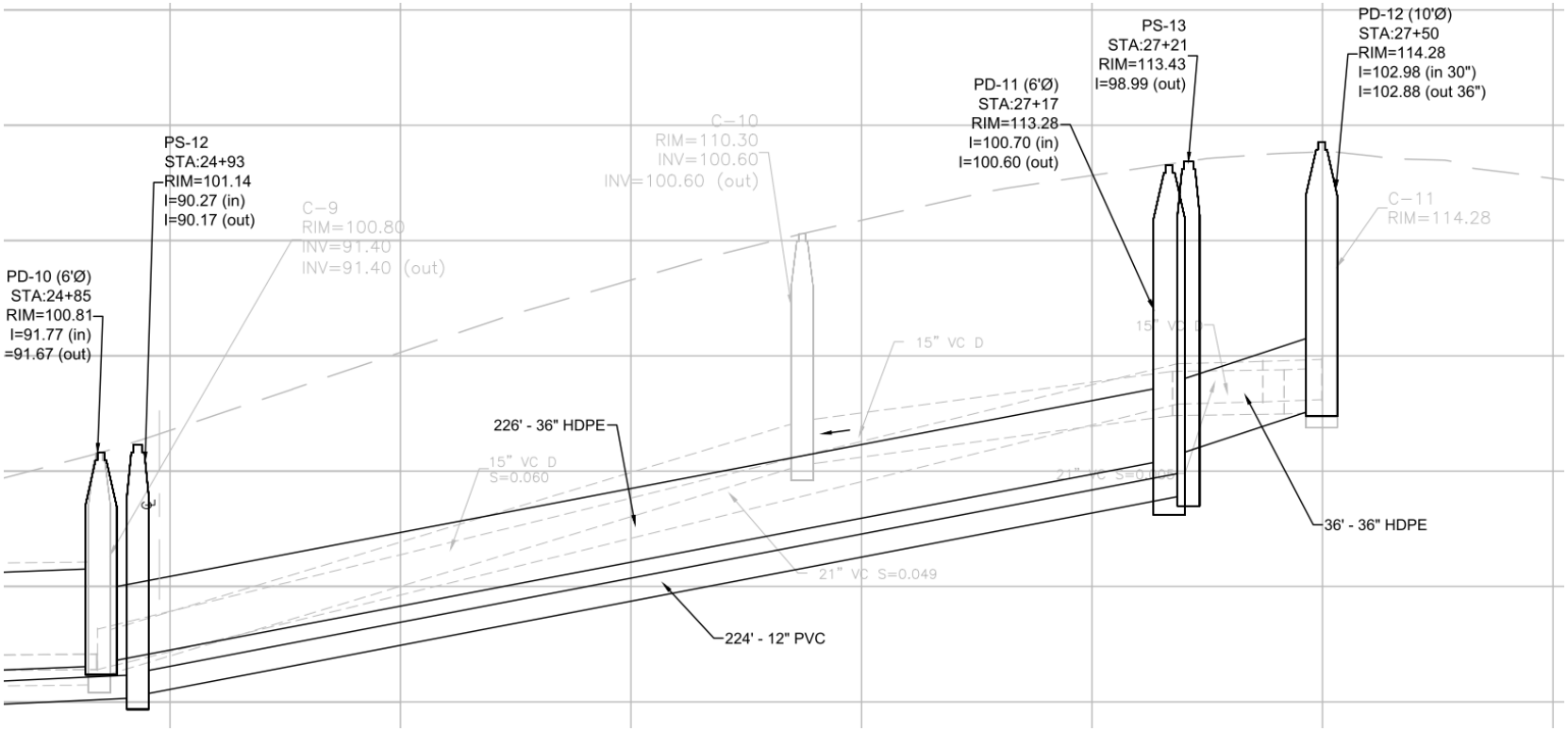
- Replace Existing Catch Basins/Add New Catch Basins



Separate Sewer System

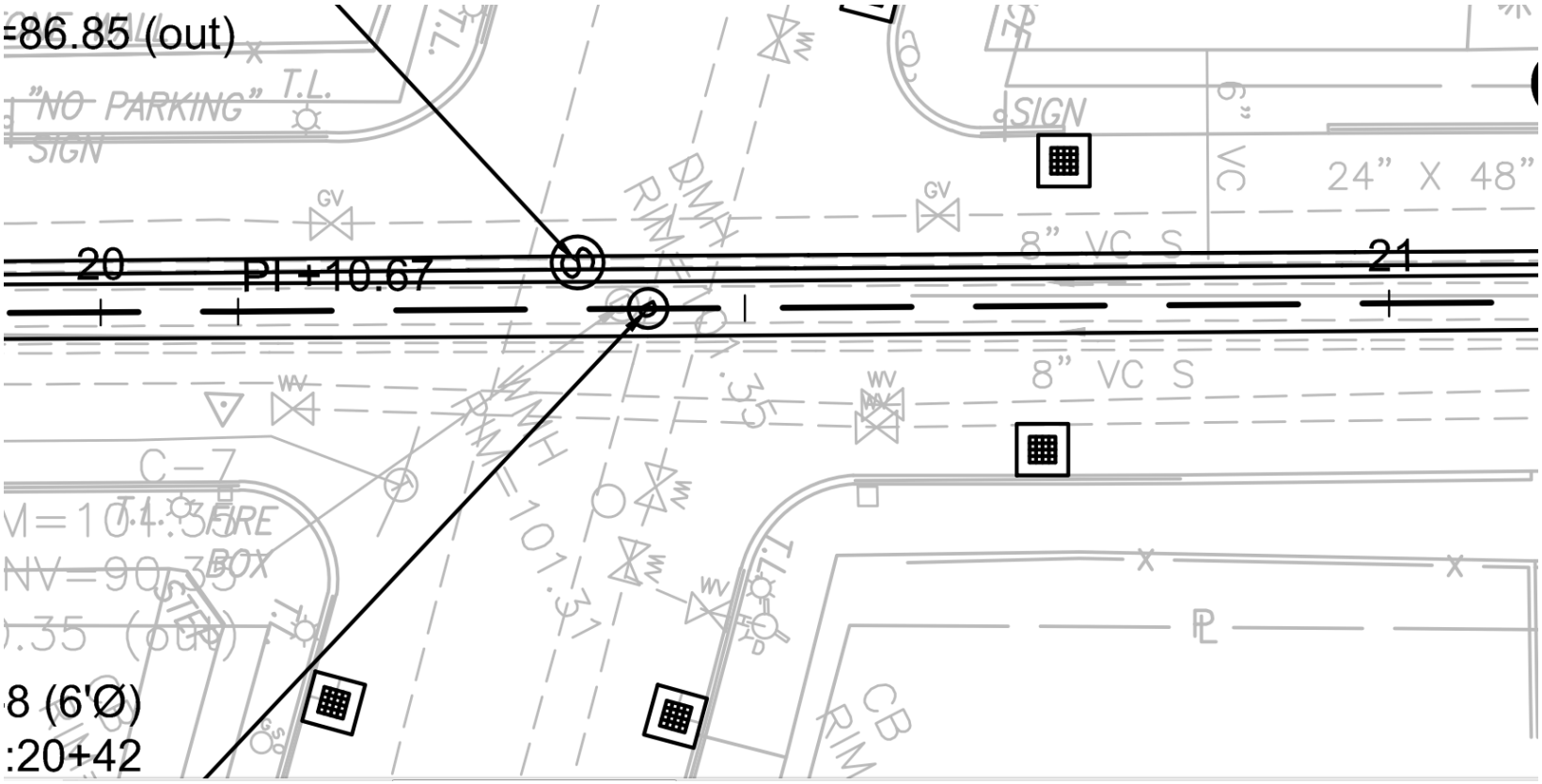
- Replace existing 8” VC sewers with 12” PVC




PS-13
STA:27+21
RIM=113.43
I=98.99 (out)
PD-12 (10'Ø)
STA:27+50
RIM=114.28
I=102.98 (in 30")
I=102.88 (out 36")
PD-11 (6'Ø)
STA:27+17
RIM=113.28
I=100.70 (in)
I=100.60 (out)
C-10
RIM=110.30
INV=100.60
INV=100.60 (out)
PS-12
STA:24+93
RIM=101.14
I=90.27 (in)
I=90.17 (out)
C-9
RIM=100.80
INV=91.40
INV=91.40 (out)
C-11
RIM=114.28
PD-10 (6'Ø)
STA:24+85
RIM=100.81
I=91.77 (in)
=91.67 (out)
15" VC D
226' - 36" HDPE
15" VC D
S=0.060
21" VC S=0.049
36' - 36" HDPE
224' - 12" PVC

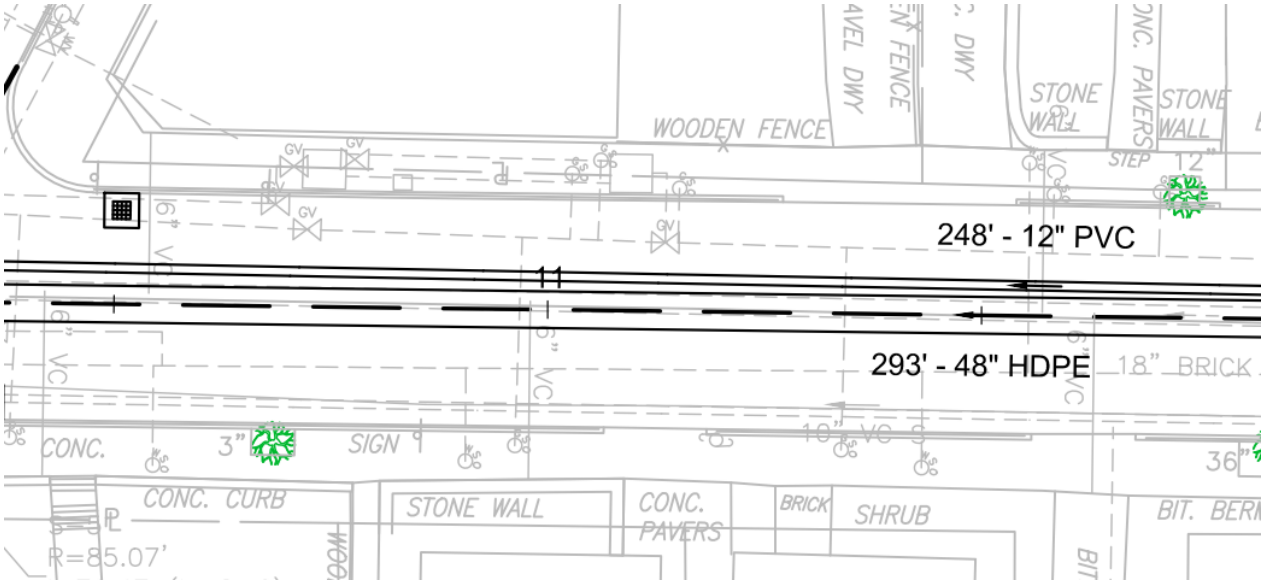
Replace Water Mains

- Replace existing 10” and 12” CI water mains with 10” and 12” CLDI


=86.85 (out)
"NO PARKING" SIGN
T.L.
SIGN
6"
VC
24" X 48"
GV
8" VC S
20
PI +10.67
21
8" VC S
C-7
FIRE BOX
CB RIM
PL
8 (6'Ø)
:20+42

Replacement of Gas Main

- Work to be performed by NSTAR prior to the start of the Sewer Separation Project

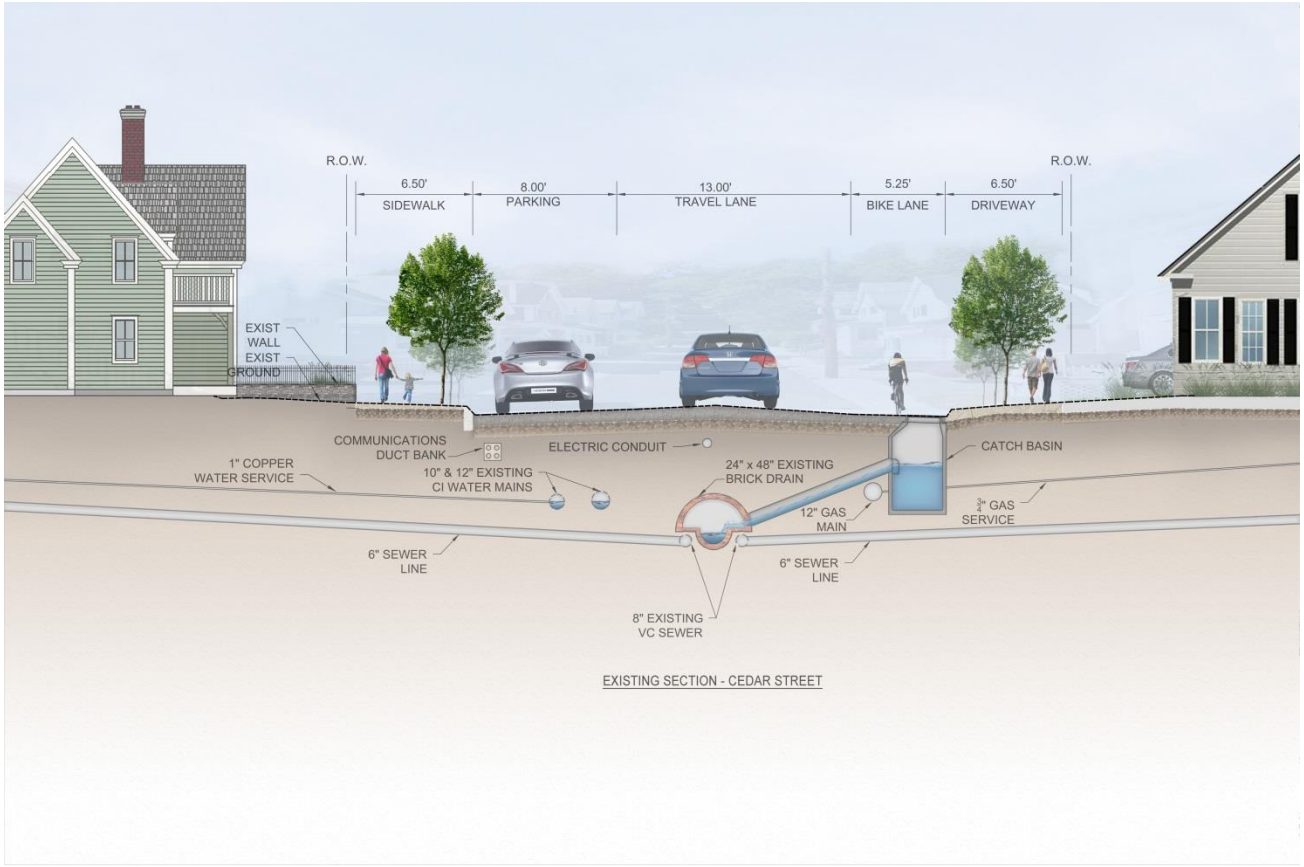


Roadway Improvements

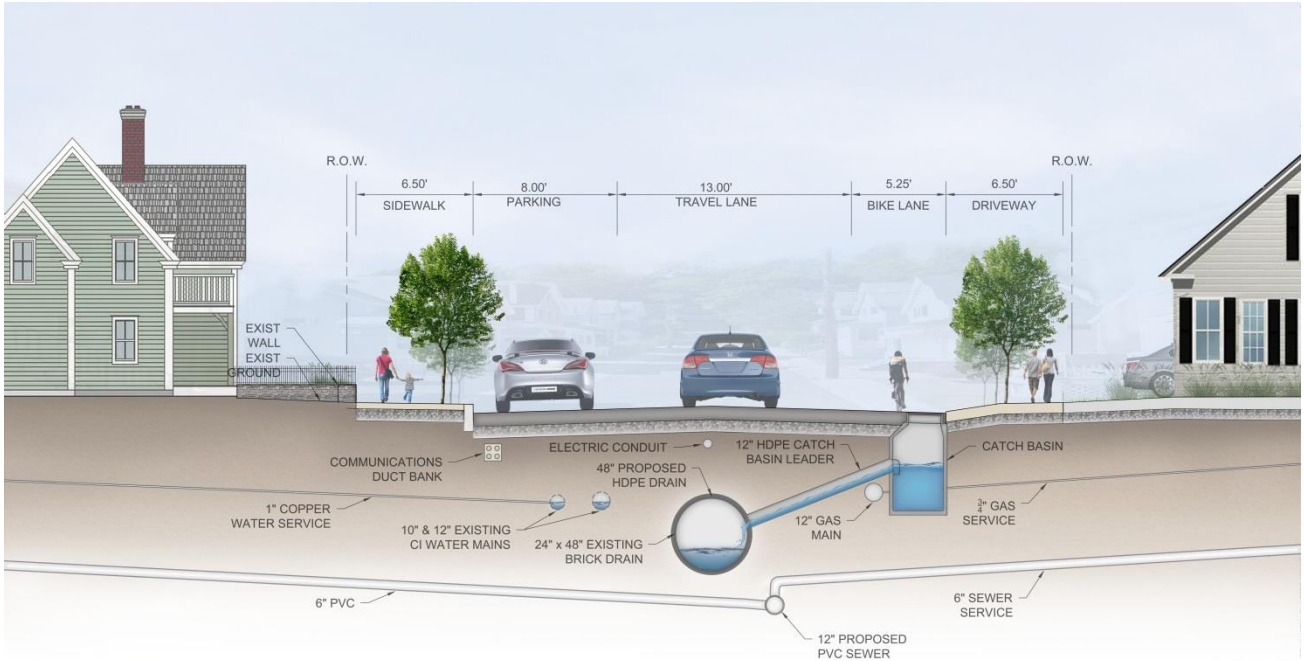
- Full Depth Roadway and Sidewalk Reconstruction
- Bike Lane
- Parking
- New Signage
- ADA Compliant Sidewalks

Roadway Design

Existing Roadway



Proposed Roadway Design



TYPICAL SECTION -CEDAR STREET

Upcoming Field Work

- Soil Borings

Project Milestones

- September 8th – Public Meeting
- Field Work - Soil Borings
- November 2014 – Public Meeting
- Winter 2015 - Bid Opening
- Spring/Summer 2015 - Construction

Construction Impacts

- Construction Sequencing and Traffic Management Plan
  - Coordinating with Department of Traffic and Parking
  - Parking Restrictions
  - Access Limited to Residents Only
- Temporary Loss of Water & Sewer Service

Working Session